

Appl. No. 10/635,400
Amdt. dated April 1, 2004
Reply to Office Action of March 17, 2004

Amendments to the Claims

This listing of claims will replace all prior versions, and listing of claims in the application:

Listing of Claims

Claims 1-21 (cancelled)

Claim 22 (currently amended) A process for converting hydrocarbons comprising contacting a hydrocarbon feedstream under hydrocarbon conversion conditions with a zeolite bound zeolite catalyst which does not contain significant amounts of non-zeolitic binder and comprises:

- (a) core crystals containing first crystals of a first zeolite and optionally second crystals of a second zeolite and when present said second zeolite has having a composition, structure type, or both that is different from ~~the structure type of~~ said first zeolite; and
- (b) binder crystals that bind together the core crystals and have an average particle size that is less than the average particle size of said core crystals, said binder crystals containing third crystals of a third zeolite and optionally fourth crystals of a fourth zeolite and when present said fourth zeolite has having a composition, structure type, or both that is different from ~~the structure type of~~ said third zeolite;

wherein at least one of said second crystals of said second zeolite, said fourth crystals of said fourth zeolite, or both are present in said zeolite bound zeolite catalyst in an amount of from about 1.0 to about 70 percent by weight based on the weight of said zeolite bound zeolite catalyst.

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Claim 23 (original) The process recited in Claim 22, wherein the hydrocarbon conversion is carried out at conditions comprising a temperature of from 100°C to 760°C and/or a pressure of from 10.1 kPag to 10.1 MPag (0.1 to 100 atmospheres) and/or a weight hourly space velocity of from 0.08 hr⁻¹ to 200 hr⁻¹.

Claim 24 (original) The process recited in Claim 23, wherein the hydrocarbon conversion is selected from the group consisting of cracking of hydrocarbons, isomerization of alkyl aromatics, disproportionation of toluene, transalkylation of aromatics, alkylation of aromatics, reforming of naphtha to aromatics, conversion of paraffins and/or olefins to aromatics, cracking of naphtha to light olefins, and dewaxing of hydrocarbons.

Claim 25 (original) The process recited in Claim 24, wherein the average particle size of said binder crystals is less than the average particle size of said core crystals.

Claim 26 (cancelled)

Claim 26 (cancelled)

Claim 27 (original) The process recited in Claims 25, wherein said catalyst contains said second crystals of second zeolite and said fourth crystals of fourth zeolite.

Claim 28 (original) The process recited in Claim 25, wherein said second zeolite has a structure type and composition that are different from said first zeolite.

Claim 29 (original) The process recited in Claim 27, wherein said fourth zeolite has a structure type and composition that are different from said third zeolite.

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Claim 30 (original) The process recited in Claim 25, wherein the zeolites in the catalyst are a large pore zeolite or an intermediate pore size zeolite.

Claim 31 (original) The process recited in Claim 30, wherein the structure type of said first zeolite and said third zeolite are selected from the group consisting of MAZ, BEA, MFI, MEL, MTW, EMT, MTT, HEU, FER, TON, and EUO.

Claim 32 (original) The process recited in Claim 31, wherein said first zeolite and said third zeolite are an intermediate pore size zeolite.

Claim 33 (original) The process recited in Claim 31, wherein the zeolite of the binder has lower acidity than the zeolite of the core.

Claim 34 (original) The process recited in Claim 31, wherein the zeolite of the binder has higher acidity than the zeolite of the core.

Claim 35 (original) The process recited in Claim 31, wherein the zeolites in said catalyst are gallosilicate or aluminosilicate.

Claim 36 (original) The process recited in Claim 31, wherein said catalyst further comprises a catalytically active metal.

Claim 37 (original) The process recited in Claim 31, wherein said core crystals have an average particle size greater of from about 1 to about 6 microns.

Claim 38 (original) The process recited in Claim 37, wherein said crystals of said binder have an average particle size of from 0.1 to 0.5 micron.

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Claim 39 (original) The process recited in Claim 1, wherein said catalyst contains at least 4 zeolites and each of the 4 zeolites have a different structure.

Claim 40 (currently amended) The process recited in Claim ~~22~~ 31, wherein said hydrocarbon conversion process ~~which~~ comprises isomerizing a hydrocarbon feed containing an aromatic C₈ stream comprising xylene isomers or a mixture of xylene isomers and ethylbenzene ~~comprising contacting said feed under isomerization conversion conditions with a zeolite bound zeolite catalyst which does not contain significant amounts of non zeolitic binder and comprises core crystals containing first crystals of a first zeolite and second crystals of a second zeolite and binder crystals containing third crystals of a third zeolite.~~

Claim 41 (original) The process recited in Claim 22, wherein said hydrocarbon conversion process is the cracking hydrocarbon compounds.

Claim 42 (original) The process recited in Claim 22, wherein said hydrocarbon conversion process is the disproportionation of toluene.

Claim 43 (original) The process recited in Claim 42, wherein the zeolites present in said catalyst have an intermediate pore size.

Claim 44 (original) The process recited in Claim 43, wherein the catalyst is selectivated.

Claim 45 (original) The process of Claim 44, wherein the selectivated catalyst contains from about 2 to about 40% by weight of coke.

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Claim 46 (original) The process recited in Claim 44, wherein the selectivated catalyst contains silicon.

Claim 47 (original) The process recited in Claim 44, wherein said toluene disproportionation conditions comprise contacting said toluene stream with said catalyst at a temperature in the range of between about 400°C to 550°C, at a pressure in the range of from 1 to 100 atmospheres and at a weight hourly space velocity in the range of from about 0.5 to 50, and wherein said toluene stream further contains hydrogen at H₂/toluene mole ratio in the range of from greater than 0 to about 10.

Claim 48 (original) The process recited in Claim 44, wherein said first zeolite and said third zeolite have a structure type selected from MFI and MEL.

Claim 49 (original) The process recited in Claim 48, wherein said binder crystals are silicalite, silicalite 2, or mixtures thereof.

Claim 50 (original) The process recited in Claim 22, wherein said hydrocarbon conversion process comprises dehydrocyclization and/or isomerization of acyclic hydrocarbons to form aromatic hydrocarbons.

Claim 51 (original) The process recited in Claim 50, wherein the catalyst contains first crystals of a first zeolite and second crystals of a second zeolite and binder crystals containing third crystals of a third zeolite and said first zeolite, said second zeolite, and said third zeolite are each independently selected from the group consisting of *BEA, MFI, MEL, MTW, MWW, LTL, EUO, MTT, FER, TON, and MOR.

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Claim 52 (original) The process recited in Claim 51, wherein the catalyst further comprises at least one catalytically active transition metal.

Claim 53 (new) The process recited in Claim 25, wherein said catalyst contains said second crystals of second zeolite and does not contain said fourth crystals of said fourth zeolite.

Claim 54 (new) The process recited in Claim 25, wherein said catalyst contains said fourth crystals of said fourth zeolite and does not contain said second crystals of said second zeolite.